ALIGNMENT OF STRATEGIC PRIORITIES AT THE FUNCTIONAL LEVEL AND BUSINESS LEVEL WITH MANUFACTURING PERFORMANCE
(Proposed Conceptual Framework and Research Method)

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Abstract

This is a study of literature to propose the influence of the perceptions of general managers and manufacturing managers concerning manufacturing priorities of their business units (alignment) on manufacturing unit performance. Particularly, this study proposes that the performance of the manufacturing unit is enhanced when general managers and manufacturing managers agree on what are the most important strategic priorities. Further, this study explains that the alignment effects on performance will be different under high and low levels of decentralization. The proposition regarding the alignment–performance relationship is stated. This study gives explanation that alignment of priorities is positively related to manufacturing performance. In addition for future research, this study suggests that levels of decentralization will moderate the positive relationship between alignment of managers' priority and performance.

Keywords: alignment, performance, decentralization

Introduction

Recently, a few studies extended the alignment research by examining factors that might lead to a greater degree of alignment between business and manufacturing strategies. For example, Joshi et al. (2003) found organizational tenure of manufacturing managers (MMs) and years of association between MMs and general managers (GMs) to affect alignment, which, in turn, affects business performance. The alignment measure as used in their study was based on the perception of two respondents per business unit- MMs and GMs- regarding their perception of the unit's manufacturing priorities. MMs were asked to rate the importance of 17 management priorities in manufacturing. Also, Papke-Shields and Malhotra et al. (2001) found influence and involvement of manufacturing executives-only one respondent-to affect alignment, which, in turn, affects business performance. Their operationalization of alignment is different from the one proposed by Boyer and McDermott (1999) because it does not focus on the extent of agreement on competitive priorities between different managerial levels, as is the case in other alignment studies including Swamidass (1986) and Youndt et al. (1996).

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The study of alignment of manufacturing priorities and its relationship with performance is currently receiving much scholarly attention. An increasing number of researchers frequently posit that maximum benefit will accrue if there is a fit between environment and strategy in different contexts. They found that lack of fit has significant effects on performance (Boyer & McDermott, 1999; Venkatraman & Prescott, 1990). Skinner (1974) cited in Joshi et al. (2003) had implicitly conceptualized the need for "strategic consensus" or "alignment" of competitive priorities throughout the manufacturing organization. Strategy must not only be well-fitted to its competitive priorities but it also must be communicated and widely understood throughout the manufacturing organization. According to Boyer and McDermott (1999) strategic consensus is achieved when various levels of employees within an organization agree on what is most important for the organization to succeed. Specifically, they defined strategic consensus as "the level of agreement within an organization regarding the relative importance of cost, quality, delivery and flexibility to the organization's operational goals"

There are two specific gaps in the alignment–performance stream of the operations strategy literature. First, as suggested by Boyer and McDermott (1999), there are very few studies that explicitly examine the issue of alignment within a manufacturing organization. Second, implicitly or explicitly, when alignment has been studied, its impact on the manufacturing unit's performance has rarely been examined; Joshi et al. (2003). However, the findings of past researches are inconsistent in identifying a clear-cut relationship between alignment and performance. These concerns continue to exist despite the observation by Adam and Swamidass (1989) that the "greatest weakness" of the field is insufficient research that studies relationships among variables.

The present study integrated the strategy and operations literature to focus on the issue of "consensus" or "alignment" within a manufacturing organization. The first objective of the present study will reexamine whether or not alignment of GMs and MMs' manufacturing priorities affects performance of manufacturing firm in Indonesia. Although, Joshi et al. (2003) found no direct relationship between alignment and performance, they found a significant relationship after including moderating variables, such as organizational tenure and years of association. However, to date, there is no study looking at decentralization as potential moderators of the alignment-performance relationship. Therefore, a second objective of the present study is to examine whether or not the moderating variables interacts with alignment in influencing performance. Specifically, these relationships are depicted in Figure 1.

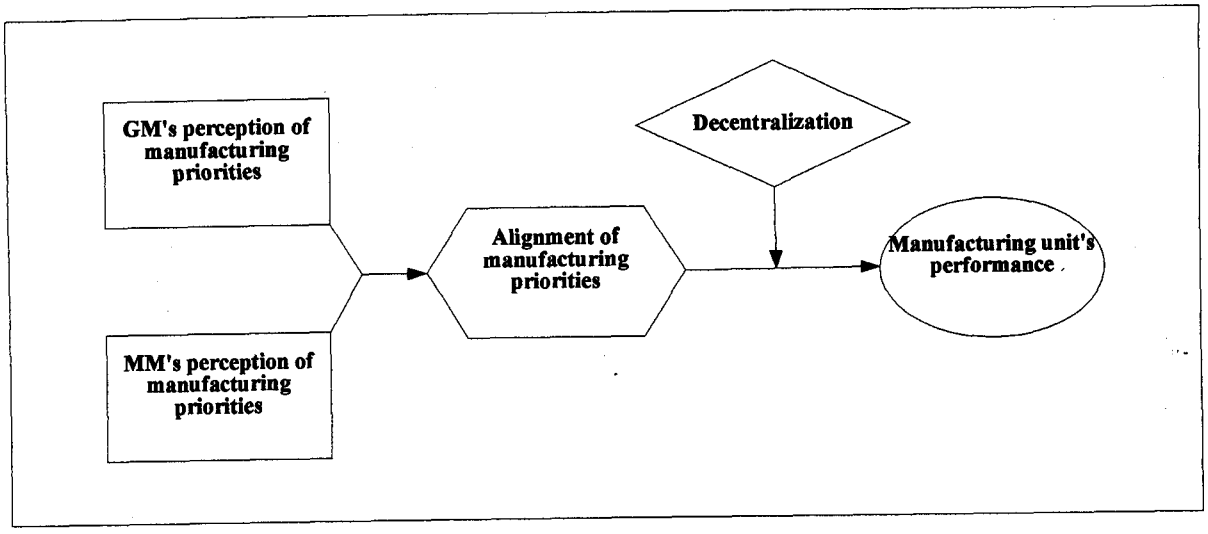

Figure. 1. A Conceptual Model Depicting the Relationship between Alignment of Manufacturing Priority, Organizational Structure, and Performance.

Based on a sample of matched pairs of manufacturing managers (MMs) and general managers (GMs), the study focuses on the alignment–performance relationship. Specifically, Joshi et al. (2003) investigate whether the performance of the manufacturing unit is enhanced when GMs and MMs agree on strategic priorities. They study whether organizational factors influence the relationship between alignment and performance of the manufacturing unit. These relationships are depicted in Figure 2.

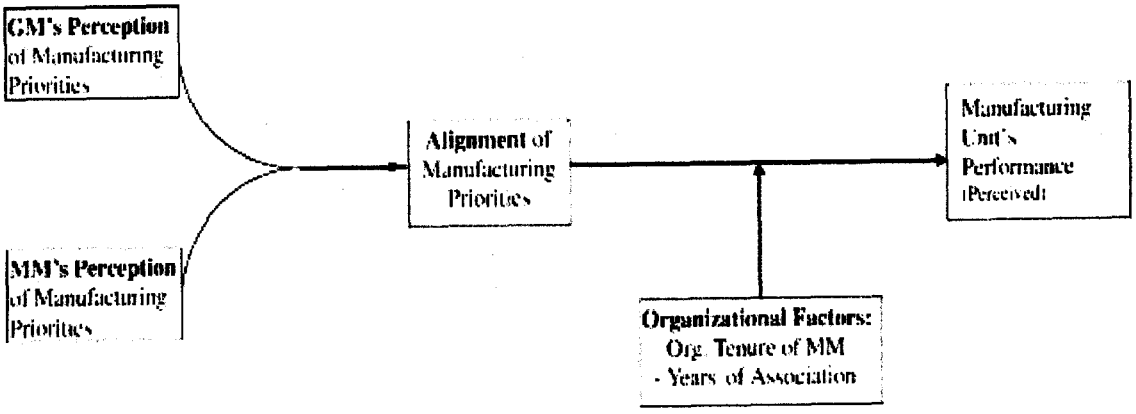

Figure 2. A Conceptual Model Depicting the Relationship between Alignments,Performance, and Organizational Factors, Joshi et al. (2003).

Literature Review

Relationship between Alignment and Performance

Hrebiniak and Snow (1982) and Dess (1987) suggested that consensus allows for strategic decisions to be easily coordinated and implemented. It was empirically shown by strategy researchers that consensus had a positive impact on firm performance. Whipp et al. (1989) cited in Joshi et al. (2003) found that alignment between strategic and operational aspects were important in successful firms. Recently, at the corporate level, Ianquinto and Fredrickson (1997) found that when examining the comprehensiveness of the decision process, the top management team consensus, or agreement about the process, was positively related to firm performance. Homburg et al. (1999) found that the presence of consensus did not universally lead to positive performance, but only in the case of a particular strategy. Further, they found that the environment moderated the consensus-performance relationship.

Hayes and Wheelwright (1984) cited in Joshi et al. (2003) argued that alignment between a firm's strategies at the business and functional levels is expected to have a positive impact on performance: "manufacturing can be a formidable competitive weapon if managed properly and the key to doing that is the development of a coherent manufacturing strategy". A coherent manufacturing strategy works in unison with business strategy. While alluding to the indirect link between alignment and performance, these earlier studies in the operations field did not explicitly study the alignment–performance relationship.

In the field of manufacturing strategy, the need for alignment is also emphasized. Skinner's (1969) pioneering work in the field, supported by Wheelwright (1984) and Swamidass (1986), they concluded that manufacturing strategy needs to be developed and in total alignment with the firm's goals and strategies (Joshi et al., 2003). Wheelwright (1984) stated that an effective manufacturing strategy is not necessarily one that promises the maximum efficiency, or engineering perfection, but rather one "that fits the business, that is, one that strives for consistency between its capabilities and policies and the business' competitive advantage". Schroeder et al. (1986), in their exploratory study found that the manufacturing mission was usually aligned with business strategy.

Proposition 1

Alignment between manufacturing competitive priorities (cost, quality, flexibility, and delivery) of general managers and manufacturing managers will be positively related to the performance of the manufacturing unit.

The relationship between Alignment of Manufacturing Priority, Performance, and Decentralization

In the alignment research, especially in the strategy field, Homburg et al. (1999), in conjunction with Ginsberg and Venkatraman (1985) noted that the

findings of the past research are inconsistent in identifying a clear-cut relationship between alignment and performance. They attributed this inconsistency of results to the lack of moderator variables in the consensus–performance relationship studies. This study used another moderating variable such as decentralization to examine the alignment–performance relationship.

Research on an organization structure's influence on manufacturing performance generally infers that more decentralized management will enhance employee performance in environments (Boyer et al., 1997; Maffei & Meredith, 1995). The relationship between alignment and performance may be moderated by level of decentralization. A decentralized structure enables employees to make decisions quickly as required in a dynamic environment (Boyer et al., 1997; Gupta et al., 1997; Karuppan, 1997; Liden et al., 1997; Collins & King, 1988). Past studies by Woodward (1965) cited in Malhotra et al. (2001) and Collins et al. (1988) also provide support for the use of a more decentralized management system in an environment where there was increased environmental uncertainty. In general, human capital enhancing systems with higher worker autonomy work better than the bureaucratic system of the past (Arthur, 1994; Youndt et al., 1996).

Proposition 2
The impact of alignment of manufacturing priority on performance is greater in higher levels of decentralization

Method

Proposed Sample and Data Collection Procedures

A purposive sampling procedure is used for data collection to identify a population from which the sampling frame can be identified. Manufacturing plants that are available in the sampling frame and representing different industries will be selected to create a diverse sample that will facilitate generalizability of the results. The sample size chosen is expected to fulfill the requirements of all the statistical techniques used. The data used in this study was collected from a matched pair of managers—a general manager and a manufacturing manager—from each participating unit. Knowing the difficulty in collecting data from multiple respondents, especially matched pairs, this study first will send the letters with a postage-paid reply card to solicit participation. Questionnaires are distributed at two levels—manufacturing and general manager—to about 400 companies. After two weeks of the initial distribution, a follow-up letter was mailed. Additional follow-ups is needed for companies that have not done a matching response.

The manufacturing manager's survey is filled out by the executive who's responsible for managing the manufacturing function of the organization. The titles of manufacturing executives who respond to the surveys included director of operations, operations manager, and manufacturing manager. The general manager's survey is completed by the supervisor of the manufacturing manager

who responded to MM's survey. Thus, the term GM refers to a superior to whom the MM reports directly.

Measurement of Variables

Alignment

The first step in measuring alignment is to survey matched pairs of MMs and GMs regarding their perception of the unit's manufacturing priorities. MMs will be asked to rate the importance of 17 management priorities in manufacturing (see the Appendix). All items were adopted from that used by Joshi et al. (2003). In Joshi et al.'s study, Cronbach alpha coefficients for nearly the all items exceed the lower limit of acceptability, generally considered to be around 0.07 (Nunnally, 1978).

To assess the manufacturing priorities of GMs, this study uses a similar set of 17 items, phrased slightly differently, since GMs view priorities from the "competitiveness" perspective, and not as "competencies" as viewed by MMs (Corbett & Wassenhove, 1993). These items had been used for similar purposes by Roth and Miller (1990), Wood et al. (1990) and Nemetz (1990) (cited in Joshi et al., 2003)

The alignment score is computed as follows. First, the disagreement between the manufacturing priorities of GMs and MMs is computed using the Euclidean distance method following Venkatraman (1989), who proposed six different perspectives on operationalzing fit in strategy research. The fit in this case is viewed as the opposite of the level of disagreement between managers. These methods have been used for similar purposes by Joshi et al. (2003). The Euclidean distance will be calculated as a square root of the sum of squared differences between the two managers on the five priorities. Subsequently, the disagreement score is converted to an alignment score for each pair of GMs and MMs by subtracting their respective disagreement score from the maximum disagreement score among all matched pairs.

Alignment score for the given pair = maximum misalignment score from the sample– misalignment score of the responding pair

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Manufacturing Unit's Performance

Lyion et al. (2000) shown that management perceptions may provide a greater understanding of the causal links in models of entrepreneurial orientation. Management perceptions of firm-level variables such as strategy, structure, decision-making processes, and firm performance are often used in entrepreneurship research (Naman & Slevin, 1993). Homburg et al. (1999) also used perceptual measures while examining the relationship between strategic consensus and SBU performance due to similar difficulties in obtaining objective

performance measures at the SBU level. Perceptions can be obtained from interviews or from surveys using questionnaires.

Swamidass and Newell (1987) contend that the performance measures to be used in a study may depend on the circumstances unique to the study. This study uses perceptual measures of manufacturing performance because it is difficult to obtain objective financial measures of performance such as profit growth, profit margin, etc., at the manufacturing unit level.

The performance of a manufacturing unit is measured based on the GM's perception on a total of seven items, if relevant (see Appendix). The items are taken from the performance rating scale used in Joshi et al. (2003). This study will use a two step process by first asking the GMs to judge the relevance of each item for evaluating the performance of the unit, and then to rate the performance on a seven-point scale ranging from "unsatisfactory" to "excellent." The seven items are: Accuracy of Work, Quality of Work, Productivity of the Group, Timeliness in Meeting Delivery Schedules, Quantity of Work, Customer Satisfaction, and Operating Efficiency.

Moderating Variables

MMs will be asked for data on decentralization. The data about decentralization is adapted from previous researches (Dewar et al., 1980; Oldham & Hackman,1981; Malhotra et al., 2001).

Analysis

A regression analysis using SPPS is conducted to assess the effect of alignment on performance. Before testing the hypotheses, this study needs to test the five statistical assumptions covering existence, independence, linearity, homoscedascity, and normality. In the first step, this study tests whether or not alignment is significantly related to manufacturing performance. In the second step, the hierarchical regression analysis will be performed on the performance measures with alignment scores and decentralization scores (equation 1).

The regression equations are given as,

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_{12} X_1 X_2 + E \qquad (1)$$

Where Y is the performance, X_1 is the alignment score, X_2 is the decentralization score, and E is the error.

Jaccard et al. (1990) suggest a method for interpretation of regression coefficients of independent variables in the presence of interaction effects. In a primer on moderated regression analysis (*Interaction Effects in Multiple Regression*), they state that the following interpretation is appropriate.

In the two-term 'main effects only' model, a regression coefficient estimates the effects of the independent variables on the dependent variable, across the levels of other independent variables: b1 reflects the trends of changes in Y with changes in
X1 at each level of X2. . . . In contrast, in the model with multiplicative terms, the regression coefficient for X1 and X2 reflect conditional relationships: α1 reflects the influence of X1 on Y when X2 equals zero . . .

Discussion

Measures of manufacturing performance will be in this study are based on the perception of the GM to whom the MM reports. While objective and financial measures of performance are preferred in the strategy literature, given the focus on functional (i.e. manufacturing) performance, this study argues for the appropriateness of perceptual measures. The studies of the interface between business and manufacturing strategy may extend this study by incorporating more objective measures of manufacturing performance, such as efficiency metrics, on-time delivery results, and results of customer satisfaction surveys.

This study is expected to confirm the findings of past work indicating that alignment or strategic consensus influences performance indirectly, either through a mediating variable (Lindman et al., 2001) or in the presence of some moderating variables. This study will has various limitations. First, while some authors shown that management perceptions may provide a greater understanding, its results must be interpreted with caution and in the context in which the study was conducted. Second, this study will use a match pairs of GM and MM. A match pairs of GM and MM of respondents may not captured an accurate, holistic picture of the organization being studied.

This study will examine the influence of only decentralization as moderating factors, while previous studies, Joshi et al. (2003) used organization tenure and years of association as moderators.

This research might also examine multiple respondents to provide an accurate, holistic picture of the organization being studied. This research should strive to examine the perceptions of different functional areas.

Future studies should be directed at examining the influence of other moderating variables, such as formalization, the use of team, functional backgrounds of managers and organizational culture, on the alignment–performance relationship (Joshi et al., 2003). Future studies might also examine the moderating effects of differences in the hierarchical levels of paired-respondents on the alignment–performance relationship. And, future studies should attempt to simultaneously capture both organizational and external variables in one model.

Other than suggesting that decentralization, formalization, and the use of team are important variable for research purposes, the results of this study will have some important implications for both academics and practitioners. From a managerial perspective it is important to know that alignment pays off under

certain conditions. Under certain levels of decentralization, formalization, and the use of team, the alignment will enhances performance. Other contextual variables that have been found to affect the alignment–performance relationship include the type of business environment (Homburg et al., 1999), human capital in the form of prestige of partners and tacit knowledge gained through experience (Hitt et al., 2001), among others.

From a research perspective, this study underscores the importance of moderating variables. Strategic management researchers (Powell, 1994 and Joshi et al., 2003) have already observed that neglecting moderating variables may increase the risk of both types I and II error. Operations management research, especially in the operations strategy area, needs to include moderating variables to unravel true underlying relationships. For example, if this study does not include moderating variables and simply reports no significant relationship between alignment and performance, when the relationship actually exists within certain homogeneous groups, this study will make a type II error by not detecting the 'true' underlying relationship. On the other hand, studies that neglect contingency variables and find significant direct relationships may, in fact, report a spurious relationship, having increased the risk of a type I error by rejecting a 'true' null hypothesis (Joshi et al., 2003).

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APPENDIX

A Model of Questionnaire

Manufacturing manager's survey

Listed below are items that describe management priorities in manufacturing. Please indicate the importance given to each item in your manufacturing unit. Please circle one number for each item.

Not at all important (1), somewhat important (2), quite important (3), very important (4), and extremely important (5).

a. Quality-of-Conformance: 8. Ensuring conformance of final product to design specifications. 12. Ensuring consistency in manufacturing. 10. Ensuring accuracy in manufacturing.

b. Flexibility: 2. Handling changes in the product mix quickly. 7. Handling variations in customer delivery schedule. 4. Introducing new designs or new products into production quickly. 16. Customizing product to customer specifications. 6. Adjusting capacity rapidly within a short period.

c. Quality-of-Design: 5. Manufacturing durable and reliable products. 15. Meeting and exceeding customer needs and preferences. 13. Making design changes in the product as desired by customer.
d. Cost: 1. Controlling production costs. 3. Improving labor productivity. 9. Running equipment at peak efficiency.
e. Delivery: 11. Meeting delivery dates. 17. Making fast deliveries. 14. Reducing manufacturing lead time.

General Manager's survey

Listed below are several dimensions for competing in an industry. Please indicate the importance you attach to each dimension in selling the products of the manufacturing unit managed by the manufacturing manager described in the previous section. Please circle one number for each item.

Not at all important (1), somewhat important (2), quite important (3), very important (4), and extremely important (5).

a. Quality-of-Conformance : G7. Consistent quality. G9. Conformance to product specifications. G16. Accuracy in manufacturing.
b. Cost : G1. Low price. G5. A standard, no-frills product.
c. Flexibility : G12. Frequent design changes or new product introductions. G14. Product variety. G15. Rapid volume changes. G17.Speed in product changeover.
d. Quality-of-Design : G2. High product performance. G3. Customized product. G4. Large number of product features or options. G11.High durability (long life) of product.
e. Delivery: G6. Short delivery time. G8. Dependable delivery promises. G10. Delivery on due date (ship on time). G13. Fast delivery.

Manufacturing unit's performance

Performance (1: unsatisfactory to 7: excellent) rated on the relevant items

Item	Relevant (yes/no)	Rating (unsatisfactory) 1 2 3 4 5 6 7 (excellent)
Accuracy of work		
Quality of work		
Productivity of the group		
Customer satisfaction		
Operating efficiency		
Quantity of work		
Timeliness in meeting		
Delivery schedules		

All scales were Likert scales as follows: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neither agree nor disagree, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

Formalization Measures

- Comprehensive rules exist for all routine procedures and operations with regard to strategic priority.

- Whenever a situation arises in the strategic priority, we have procedures to follow in dealing with it.
- When rules and procedures exist in the strategic priority, they are in written form.
- The MMS's job has up-to-date job description.
- The job description for the MM's job contains all of the duties performed by individual MMs.

(Source: Dewar et al. (1980); Oldham & Hackman (1981); Malhotra et al. (2001)

Decentralization Measures

- MMs are involved in decisions related to strategic priority. MMs work autonomously with little or no management guidance.
- MMs have a high degree of participation in the adoption or change in the organization policies affecting their area.
- MMs have high degree of participation in hiring and staffing decisions.
- MMs determine their own workflow, scheduling or order of tasks.

(Source: Dewar et al. (1980); Oldham & Hackman (1981); Malhotra et al. (2001)

Extent of the Use of Teams Measures

- MMs are organized into formal teams for new product design or introduction.
- MMs are involved in temporary teams that form that form to solve problems or accomplish specific goals.
- MMs are involved in teams that form to solve problems.

(Source: Oldham & Hackman (1981); Malhotra et al. (2001)